We claim:

1. A process for preparing meta- or para-xylylenediamine, comprising the steps of ammoxidizing meta- or para-xylene to iso- or terephthalonitrile, by contacting the vaporous product of this ammoxidation stage directly with a liquid organic solvent (quench),
removing products having a boiling point higher than phthalonitrile (high boilers) from the resulting quench solution or suspension and hydrogenating the phthalonitrile,
wherein the organic solvent used for the quench is N-methyl-2-pyrrolidone (NMP),
after the removal of the high boilers and before the hydrogenation, there is a partial or complete removal of the NMP and/or of products having a boiling point lower than phthalonitrile (low boilers) and
the phthalonitrile for the hydrogenation step is dissolved or suspended in an organic solvent or in liquid ammonia.

2. The process according to claim 1 for preparing meta-xylylenediamine, comprising the steps of ammoxidizing meta-xylene to isophthalonitrile and hydrogenating the isophthalonitrile.

3. The process according to either of claims 1 and 2, wherein the high boilers are removed distillatively from the resulting quench solution or suspension via the bottom, while phthalonitrile is removed via the top together with the NMP solvent and low boilers.

4. The process according to any of the preceding claims, wherein, after the removal of the high boilers, the NMP is removed partly or completely and/or low boilers are removed distillatively via the top.

5. The process according to either of claims 1 and 2, wherein the resulting quench solution or suspension is separated into high boilers, low boilers and NMP phthalonitrile in a sidestream column in such a way that high boilers are removed via the bottom, NMP and/or low boilers via the top and phthalonitrile via a sidestream.

6. The process according to either of claims 1 and 2, wherein the resulting quench solution or suspension is separated into high boilers, low boilers and NMP and phthalonitrile in a dividing wall column in such a way that high boilers are removed via the bottom, NMP and/or low boilers via the top and phthalonitrile via a sidestream in the dividing wall region of the column.

7. The process according to any of the preceding claims, wherein the phthalonitrile for the hydrogenation step is dissolved or suspended in NMP, xylene, benzylamine, tolylamine and/or xylylenediamine.

8. The process according to any of the preceding claims, wherein the hydrogenation is carried out in the presence of ammonia.

9. The process according to any of the preceding claims, wherein the ammoxidation is carried out at temperatures of from 300 to 500°C over a catalyst containing V, Sb and/or Cr, as an unsupported catalyst or on an inert support.

10. The process according to any of the preceding claims, wherein the temperature of the quench effluent in the quench with NMP is from 40 to 180°C.

11. The process according to any of the preceding claims, wherein the hydrogenation is carried out at temperatures of from 40 to 150°C over a catalyst containing Ni, Co and/or Fe, as an unsupported catalyst or on an inert support.

12. The process according to any of the preceding claims, wherein, after the hydrogenation, the xylylenediamine is purified by distilling off any solvent used and ammonia, and also any relatively low-boiling by-products, via the top and distillatively removing relatively high-boiling impurities via the bottom.

13. The process according any of the preceding claims, wherein, after the hydrogenation, any solvent used and ammonia and also any low-boiling by-products, are distilled off and, afterwards, xylylenediamine is removed from high-boiling impurities by distillation.

14. The process according to either of the two preceding claims, wherein the xylylenediamine, after the distillation, is extracted for further purification with an organic solvent.

15. The process according to the preceding claim, wherein cyclohexane or methylcyclohexane are used for the extraction.